



Attorney Docket No. YOR920000164US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s): A. Dan et al.
Docket No.: YOR920000164US1
Serial No.: 09/642,526
Filing Date: August 18, 2000
Group: 2143
Examiner: Milan S. Kapadia

I hereby certify that this paper is being deposited on this date with the U.S. Postal Service as first class mail addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Signature: Steven M. Hamlin Date: January 21, 2004

Title: Electronic Service Level Agreement for
Web Site and Computer Services Hosting

APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
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Sir:

Applicants (hereinafter referred to as "Appellants") hereby appeal the final rejection of claims 1-26 of the above referenced application.

REAL PARTY IN INTEREST

The present application is assigned to International Business Machines Corp., as evidenced by an assignment recorded August 18, 2000 in the U.S. Patent and Trademark Office at Reel 11032, Frame 0148. The assignee, International Business Machines Corp., is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals and interferences.

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STATUS OF CLAIMS

Claims 1-26 are pending in the present application. Claims 1-6, 10-18 and 22-26 stand rejected under 35 U.S.C. §102(b), and claims 7-9 and 19-21 stand rejected under 35 U.S.C. §103(a). Claims 1-26 are appealed.

STATUS OF AMENDMENTS

There have been no amendments filed subsequent to the final rejection.

SUMMARY OF INVENTION

The present invention provides computer-based methods and systems for building, provisioning and executing one or more electronic service level agreements (eSLAs) for Web and other computer hosing services, which specify and enforce service contracts for Web and other computer hosting services. Further, the present invention provides a process whereby an eSLA can be used for negotiation, service level monitoring, and enforcement (Specification, page 3, line23, through page 4, line 2).

In one aspect of the invention, a computer-based eSLA system includes four main components: (1) an eSLA builder; (2) an eSLA provisioner; (3) one or more execution systems; and (4) a system configuration and measurement system. Generally, the eSLA builder component provides the mechanism for defining and pricing the eSLA, checking the validity of the eSLA and a repository for storing the completed eSLAs. The provisioning system is responsible for configuring the (run-time) system in order to meet one or a set of eSLAs. The execution system is responsible for handling the run-time user requests, e.g., Web servers and load distributors, and a mechanism for informing the eSLAs at run-time. The system configuration and measurement system maintains information on the current system configuration, and run-time information on the metrics that are part of the eSLA (Specification, page 4, lines 3-13).

In one preferred embodiment, the eSLA builder component has sub-components for authoring eSLAs, a pricer component for pricing the offered service, a validity checker for determining if the new eSLA along with existing eSLAs can be supported by the run-time system, and a repository for storing the eSLAs (Specification, page 4, lines 14-17).

A block diagram showing the eSLA system according to an embodiment of the present invention and an overall environment in which the system may operate is shown in FIG. 1. A block diagram showing components of an eSLA builder module (of FIG. 1) according to an embodiment of the present invention is shown in FIG. 2. The remainder of the modules of FIG. 1 are further described in FIGS. 3 and 4. A flow diagram showing an overall eSLA methodology according to an embodiment of the present invention is shown in FIG. 5. A flow diagram showing an eSLA building process according to an embodiment of the present invention is shown in FIG. 6. The flow diagram of FIG. 6 is a detailed description of a step in the flow diagram of FIG. 5. The remaining steps of the methodology described in FIG. 5 are shown in FIGS. 7-9.

The invention is applicable to any computer hosting services environment in which it is desirable to build, execute, monitor and act on electronic service level agreements in order to, among other things, obtain significant reductions in the cost of ownership and hosting associated with such environments (Specification, page 8, lines 17-21).

ISSUES PRESENTED FOR REVIEW

(I) Whether claims 1-6, 10-18 and 22-26 are properly rejected under 35 U.S.C. §102(b) as being anticipated by PCT No. WO 97/29443 to O'Brien et al. (hereinafter "O'Brien").

(II) Whether claims 7-9 and 19-21 are properly rejected under 35 U.S.C. 103(a) as being unpatentable over O'Brien in view of U.S. Patent No. 5,893,905 to Main et al. (hereinafter "Main").

GROUPING OF CLAIMS

Claims 1-26 do not stand or fall together. More particularly, claims 1-6, 10-18 and 22-25 stand or fall together, claims 7-9 and 19-21 stand or fall together, and claim 26 stands or falls on its own.

ARGUMENT

Appellants incorporate by reference herein the disclosure of all previous responses filed in the present application, namely, responses dated May 30, 2003 and November 19, 2003. Sections (I) and (II) to follow will respectively address issues (I) and (II) presented above.

(I) With regard to the issue of whether claims 1-6, 10-18 and 22-26 are properly rejected under 35 U.S.C. §102(b) as being anticipated by O'Brien, the final Office Action contends that O'Brien discloses all of the claim limitations recited in the subject claims. Appellants respectfully assert that O'Brien fails to disclose all the claim limitations of the subject claims.

The service system set forth in O'Brien involves service level agreements (hereinafter "SLAs") and parameters indicative of system availability. The decision to provide services defined in an SLA is based on stored parameters, including estimations of capacity, and information that is not provided in real-time. Each time a service is provided and the resources of the system are allocated, information on how well the resources performed may be used to update the stored parameters.

Independent claims 1, 13, 25 and 26 of the present invention recite techniques that, construct an electronic service level agreement between a service provider and a client based on client input for an application associated with the client to be hosted by the service provider; and check the consistency of the electronic service level agreement with respect to the one or more existing electronic service level agreements previously committed to by the service provider.

Thus, the invention provides for an analysis of proposed and existing SLAs to detect inconsistencies that can result from concurrent usage in hosting services. For example, inconsistencies in resource requirements may occur when two or more electronic SLAs require more CPU capacity than is available. As another example, inconsistencies may occur if throughput objects of a first service cause a failure to meet a response time of a second service.

Further, the present invention provides a system in which the consistency of a proposed SLA is checked with respect to one or more existing SLAs that were committed to by the service provider, while decisions to provide service in O'Brien are based on estimated stored parameters of past resource performance. As described on page 6, lines 16-24, of O'Brien, "a decision to provide a service is based on stored parameters and not on real-time or near real-time information of the resources required to provide the service: there is no need to perform a detailed analysis of the resources available to the system before the decision is reached. The system bases its decisions on an estimation of the capacity of the system to provide a service at the requested time" (emphasis added). Therefore, in O'Brien, consideration is given to stored estimates of parameters, while the

present invention performs a check for inconsistencies with actual existing SLAs that were committed to by the service provider. Thus, O'Brien fails to disclose a check for inconsistencies between a proposed SLA and one or more existing SLAs committed to by the service provider as described above.

For example, the required CPU capacity for a proposed SLA in the present invention would be checked against the required CPU capacities of the one or more actual existing SLAs that were previously committed to by the service provider. This provides an accurate assessment of whether the system can handle the requirements of the proposed SLA. However, in O'Brien, the required CPU capacity for the proposed SLA would be compared to an estimate of the available CPU capacity based on past resource performance in the system. However, if the available CPU capacity of the system is overestimated in accordance with the technique in O'Brien, O'Brien may be unable to support the proposed SLA which has already been committed to by the service provider.

This is explained on page 6, lines 28-31, of O'Brien where it states that "[a]lthough the lack of a detailed resource analysis during provisioning does increase the risk that once a service has been negotiated for it might not be possible to complete it, such failure can be dealt with acceptably . . ." This teaches away from the present invention, since the present invention checks resources of actual committed SLAs with requirements of a proposed SLA prior to allocation.

Advantageously, in the present invention, a validity check, which involves checking the consistency of the proposed SLA with respect to one or more existing SLAs, is performed after the construction of an SLA, but before system resource allocation. Should the proposed SLA fail the validity check, the proposed SLA may be reconstructed and checked again before it is provisioned. Since O'Brien considers estimated stored parameters, in order for a consistency check to occur against one or more actual existing SLAs, the system of O'Brien would be required to provision the proposed SLA and allocate resources of the system. Thus, O'Brien could not allow for reconstruction of an SLA after checking consistencies with actual existing SLAs, and before allocation of the system resources.

In an Advisory Action, the Examiner contends that O'Brien teaches that an SLA negotiated by the primary agent is compared to stored SLAs indicative of its own capacity to provide a service, which is determined by a predetermined set of other SLAs. Even if the Examiner's contention is

correct, which the Appellants do not believe is the case, the comparison described is between a proposed SLA and SLAs stored in agents indicating that agent's ability to provide a service. The present invention checks for inconsistencies between a proposed SLA and those SLAs that have already been committed to by the service provider. Therefore, the Examiner's contention that O'Brien discloses a check for consistency via a comparison between a proposed SLA and one or more stored SLAs, as in the independent claims of the present invention, is incorrect.

Dependent claims 2-8, 12, 14-18 and 22-24 are patentable for at least the reasons that independent claims 1, 13, 25 and 26 are patentable. In addition, it is asserted that dependent claims 2-8, 12, 14-18 and 22-24 recite patentable subject matter in their own rights.

Further, independent claim 26 recites an electronic service level agreement building module performing the techniques of the previous independent claims as well as the step of modifying the electronic service level agreement when at least one inconsistency is found. Further, independent claim 26 recites a provisioning module which provisions one or more resources of an infrastructure on which the application is to be hosted in accordance with the constructed electronic service level agreement. Finally, independent claim 26 recites an execution system which executes the constructed electronic service level agreement in accordance with the one or more provisioned resources. O'Brien fails to disclose these three modules and the techniques they perform.

Therefore, for at least the reasons given above, Appellants again respectfully request that the §102(b) rejections of claims 1-6, 10-18 and 22-26 be withdrawn.

(II) With regard to the issue of whether claims 7-9 and 19-21 are properly rejected under 35 U.S.C. §103(a), Appellants respectfully assert that the cited combination fails to establish a prima facie case of obviousness under 35 U.S.C. §103(a), as specified in M.P.E.P. §2143.

As set forth therein, M.P.E.P. §2143 states that three requirements must be met to establish a prima facie case of obviousness. First, the cited combination must teach or suggest all the claim limitations. Second, there must be some suggestion or motivation to combine reference teachings. Third, there must be a reasonable expectation of success. While it is sufficient to show that a prima facie case of obviousness has not been established by showing that one of the requirements has not been met, Appellants respectfully believe that none of the requirements have been met.

First, with respect to claims 7-9 and 19-21, the collective teaching of O'Brien and Main fails to suggest or render obvious the elements of such claims. For at least this reason, a prima facie case of obviousness has not been established.

Claims 7-9 are dependent on independent claim 1, and claims 19-21 are dependent on independent claim 13. The failure of O'Brien to disclose the elements recited in independent claims 1 and 13 is described above. Main discloses an automated SLA performance analysis monitor. However, the combination of O'Brien and Main also fails to disclose those elements of independent claims 1 and 13 described above. Therefore, the combination of O'Brien and Main fails to teach or suggest all the limitations of claims 7-9 and 19-21.

Second, with respect to claims 7-9 and 19-21, Appellants reassert that no motivation or suggestion exists to combine O'Brien and Main in a manner proposed by the Examiner, or to modify their teachings to meet the claim limitations. For at least this reason, a prima facie case of obviousness has not been established.

Furthermore, the Federal Circuit has stated that when patentability turns on the question of obviousness, the obviousness determination "must be based on objective evidence of record" and that "this precedent has been reinforced in myriad decisions, and cannot be dispensed with." In *re Lee*, 277 F.3d 1338, 1343 (Fed. Cir. 2002). Moreover, the Federal Circuit has stated that "conclusory statements" by an examiner fail to adequately address the factual question of motivation, which is material to patentability and cannot be resolved "on subjective belief and unknown authority." *Id* at 1343-1344.

In the final Office Action, in paragraphs 1 and 2 of page 6, the Examiner provides the following statement to prove motivation to combine O'Brien and Main, with emphasis supplied: "it would have been obvious . . . to expand the system taught by O'Brien with Main's teaching with regards to this limitation, with the motivation of alerting service requestor of the potential impact of SLA violation."

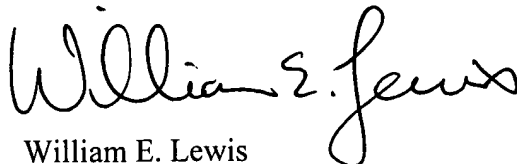
Appellants submit that these statements are based on the type of "subjective belief and unknown authority" that the Federal Circuit has indicated provides insufficient support for an obviousness rejection. More specifically, the Examiner fails to identify any objective evidence of record which supports the proposed combination.

Lastly, with respect to claims 7-9 and 19-21, Appellants reassert that there is no reasonable expectation of success in achieving the present invention through a combination of O'Brien and Main. For at least this reason, a prima facie case of obviousness has not been established. Despite the assertion in the final Office Action, Appellants do not believe that O'Brien and Main are combinable since it is not clear how one would combine them. No guidance was provided in the final Office Action as to how the two references can be combined to achieve the present invention. However, even if combined, for the sake of argument, they would not achieve the techniques of the claimed invention. For example, the element of checking the consistency of the electronic service level agreement with respect to one or more existing electronic service level agreements previously committed to by the server is not described in either reference.

Therefore, for at least the reasons given above, Appellants again respectfully request that the §103(a) rejections of claims 7-9 and 19-21 be withdrawn.

For at least the reasons given above, Appellants respectfully request withdrawal of the §102(b) and §103(a) rejections of claims 1-26. Appellants believe that claims 1-6, 10-18 and 22-26 are patentable over O'Brien, and claims 7-9 and 19-21 are not obvious in view of O'Brien and Main. As such, the application is asserted to be in condition for allowance, and favorable action is respectfully solicited.

Respectfully submitted,

A handwritten signature in black ink that reads "William E. Lewis". The signature is fluid and cursive, with the first name "William" being the most prominent part.

Date: January 21, 2004

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APPENDIX

1. Apparatus for use in a computer hosting services environment, the apparatus comprising:
at least one processor operative to: (i) construct an electronic service level agreement between a service provider and a client based on client input for an application associated with the client to be hosted by the service provider; and (ii) check the consistency of the electronic service level agreement with respect to one or more existing electronic service level agreements previously committed to by the service provider.
2. The apparatus of claim 1, wherein the at least one processor is further operative to modify the electronic service level agreement when at least one inconsistency is found.
3. The apparatus of claim 1, wherein the at least one processor is further operative to provision one or more resources of an infrastructure on which the application is to be hosted in accordance with the constructed electronic service level agreement.
4. The apparatus of claim 1, wherein the at least one processor is further operative to execute the constructed electronic service level agreement.
5. The apparatus of claim 1, wherein the at least one processor is further operative to report one or more events associated with the execution of the constructed electronic service level agreement.
6. The apparatus of claim 5, wherein the one or more events comprise at least one of a violation of a portion of the electronic service level agreement and a near-violation of a portion of the electronic service level agreement.

7. The apparatus of claim 5, wherein the at least one processor is further operative to provide a warning that a portion of the electronic service level agreement is one of violated and near-violated.

8. The apparatus of claim 5, wherein the at least one processor is further operative to provide an alarm that a portion of the electronic service level agreement is one of violated and near-violated.

9. The apparatus of claim 5, wherein the at least one processor is further operative to provide an explanation as to why a portion of the electronic service level agreement is one of violated and near-violated.

10. The apparatus of claim 1, wherein the at least one processor is further operative to determine whether the electronic service level agreement will be satisfied for a given workload based on historical data.

11. The apparatus of claim 10, wherein the at least one processor is further operative to determine for how long the electronic service level agreement will be satisfied based on a workload forecasting and performance prediction technique.

12. The apparatus of claim 1, wherein the constructing operation comprises determining pricing for inclusion in the electronic service level agreement associated with the hosting of the application by the service provider.

13. A computer-based method for use in a computer hosting services environment, the method comprising the steps of:

constructing an electronic service level agreement between a service provider and a client based on client input for an application associated with the client to be hosted by the service provider; and

checking the consistency of the electronic service level agreement with respect to one or more existing electronic service level agreements previously committed to by the service provider.

14. The method of claim 13, further comprising the step of modifying the electronic service level agreement when at least one inconsistency is found.

15. The method of claim 13, further comprising the step of provisioning one or more resources of an infrastructure on which the application is to be hosted in accordance with the constructed electronic service level agreement.

16. The method of claim 13, further comprising the step of executing the constructed electronic service level agreement.

17. The method of claim 13, further comprising the step of reporting one or more events associated with the execution of the constructed electronic service level agreement.

18. The method of claim 17, wherein the one or more events comprise at least one of a violation of a portion of the electronic service level agreement and a near-violation of a portion of the electronic service level agreement.

19. The method of claim 17, further comprising the step of providing a warning that a portion of the electronic service level agreement is one of violated and near-violated.

20. The method of claim 17, further comprising the step of providing an alarm that a portion of the electronic service level agreement is one of violated and near-violated.

21. The method of claim 17, further comprising the step of providing explanation as to why a portion of the electronic service level agreement is one of violated and near-violated.

22. The method of claim 13, further comprising the step of determining whether the electronic service level agreement will be satisfied for a given workload based on historical data.

23. The method of claim 22, further comprising the step of determining for how long the electronic service level agreement will be satisfied based on a workload forecasting and performance prediction technique.

24. The method of claim 13, wherein the constructing step comprises determining pricing for inclusion in the electronic service level agreement associated with the hosting of the application by the service provider.

25. An article of manufacture for use in a computer hosting services environment, comprising a machine readable medium containing one or more programs which when executed implement the steps of:

constructing an electronic service level agreement between a service provider and a client based on client input for an application associated with the client to be hosted by the service provider; and

checking the consistency of the electronic service level agreement with respect to one or more existing electronic service level agreements previously committed to by the service provider.

26. A computer-based system for use in a computer hosting services environment, the system comprising:

an electronic service level agreement building module which: (i) constructs an electronic service level agreement between a service provider and a client based on client input for an application associated with the client to be hosted by the service provider; (ii) checks the consistency of the electronic service level agreement with respect to one or more existing electronic service level agreements previously committed to by the service provider; and (iii) modifies the electronic service level agreement when at least one inconsistency is found;

a provisioning module which provisions one or more resources of an infrastructure on which the application is to be hosted in accordance with the constructed electronic service level agreement; and

an execution system which executes the constructed electronic service level agreement in accordance with the one or more provisioned resources.